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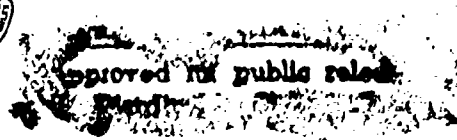
Beans, Bullets or Both?

(Are We Emphasizing Logistics Enough In
Senior Service School Wargames?)

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ABSTRACT

Throughout history logistics has played a key role in the success or failure of warfare. As the United States military draws down the size of its forces and reduces its forward presence, logistics will become even more important. Consequently, future Commanders-in-Chief (CINCs) will need to know more about the capabilities and limitations of logistics.

The Army's and Marine Corps' manuals on campaign planning emphasize the importance of logistics during all phases of combat planning and operations. However, history teaches us we may not always practice what we preach.

This paper examines logistic issues associated with three post-WW II operations--Korea, Grenada, and Operation DESERT SHIELD/STORM. In each of these operations, logistics capability was the key to successfully deploying troops and equipment directly into a combat zone. While we have improved the way we deploy and sustain our forces, we still unnecessarily recreate logistics problems each time we become involved in a contingency. One reason for this is our CINCs often lack sufficient training in dealing with the logistic intricacies of a campaign.

We can overcome this training deficiency by developing wargames with realistic logistic scenarios and immediately incorporating them into our senior service school curriculums. Logistically enhanced wargames are essential in heightening the next generation of combat leaders' awareness of their future logistic challenges.

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The Washington Post

THURSDAY, 23 AUGUST 1990

DISASTER IN THE DESERT-- US TROOPS OVERRUN

Saudi Arabia, 23 Aug.--Today, at approximately 9AM Saudi time (1 AM, EST), Iraqi forces overran US and Saudi Forces positioned to defend the Kingdom of Saudi Arabia from Iraqi attack. This move appears to be a continuation of the battle plan begun by Saddam Hussein when he invaded Kuwait on August 2. Although US and Saudi forces fought valiantly, they were too small in numbers to defend against the onslaught of an estimated 150,000 well trained and battle hardened Iraqi troops, and were quickly overrun.

While the US has over 200 warplanes deployed to the region, they were not able to prevent the overrun, although they did exact a sizable toll on the Iraqis as they moved south. Early estimates indicate US and Saudi aircraft destroyed numerous armored vehicles and transports as well as a large number of ground forces. But, as effective as they were, the aircraft could not stop the Iraqi ground forces from rolling over US and Saudi ground forces. While official statistics are not yet available, a reliable source within the Central Command staff has indicated that losses could be as high as 40% casualties and another 20%

taken prisoner. If these estimates are even close to being correct it will mean the US no longer has an effective fighting force in the theater.

Currently, remaining US and Saudi forces are withdrawing to the south while fighting delaying actions in hope that reinforcements will arrive soon. Unfortunately, our troops are low on supplies, ammunition, and heavy artillery as a result of General Schwarzkopf's (Commander-in-Chief, Central Command) decision in early August to deploy as many combat forces as possible first without their normal contingent of support units. Most of the US heavy equipment available came from US Marine Maritime Prepositioning Ships (MPS) which were the first supply ships to arrive in the Persian Gulf on 15 August. While these supplies were essential, they were only designed to support a Marine Expeditionary Brigade for 30 days, not the huge number of Marine and Army forces deployed without support units.

When reporters asked about the wisdom of deploying combat units without their support units, a CENTCOM spokesman, Colonel I. R. Coward, said

"...while this approach of deploying the maximum number of combat forces without their support units appeared to be a prudent decision at the time, history may prove otherwise. However, under the circumstances I'm not sure we really had any other alternative. It's a Catch 22 scenario."

When asked how soon reinforcements would be arriving, General Schwarzkopf's spokesman said he couldn't divulge exact timetables, but did admit that receiving more troops into the Kingdom would be considerably more difficult in light of the fact the major airfields of King Khalid Military City, Daharan, and Riyadh as well the seaports of Jubail and Dammam are either destroyed or in Iraqi hands. Colonel Coward also said "we were concerned about our logistical tail and Saddam Hussein obviously recognized this fact and identified it as one of our centers of gravity. We were a little surprised that he targeted and attacked the major airports and seaports so quickly."

While the full impact of Saddam Hussein's bold move south is not yet fully known, it appears unlikely that the US will be able to mount a counterattack very soon. Army Major General William G. Pagonis, the theater logistic commander, stated that "The loss of key logistic ports and the need to rapidly resupply and sustain those forces already in theater, is likely to cause a logistics problem which makes the Normandy invasion of 1944 look like planning for a Sunday outing."

IS LOGISTICS REALLY IMPORTANT?

The preceding article is obviously fictitious since we know that no such event ever occurred during the opening days of Operation DESERT SHIELD. However, it does serve to illustrate a plausible scenario if Iraq had decided not to assume a defensive posture in Kuwait and had taken the offense before sufficient coalition forces could arrive. One of the greatest challenges facing General Norman Schwarzkopf, commander of Central Command and Coalition Forces, was logistics. How could he quickly move enough personnel and equipment, most of which was in the continental US, to a theater that was " 8,000 miles by air and more than 10,000 miles by sea" away? By the end of the deployment phase over "10,000 air sorties and more than 500 ships brought the force to the theater." (1:6) General Schwarzkopf recognized the herculean effort the logistics community put forth to make Operation Desert Storm a success when he said:

"Operation Desert Shield was the fastest build up and movement of combat power across greater distances in less time than any other time in history. It was an absolute gigantic accomplishment, and I can't give credit enough to the logisticians and transporters who were able to pull this off." (2:E-1)

Logistics is an integral part of any successful campaign. Although logistics may not be as glamorous as tanks, infantry, airplanes, or ships, an effective commander clearly understands the relationship between combat and support forces in force projection.

Which brings us to the thesis of this paper. If we understand the importance of logistics, then why don't we incorporate more logistics into the numerous war college wargaming exercises that our future combat leaders are currently participating in?

I am not advocating that every wargame include a detailed logistic planning exercise, but I do maintain that each game should be capable of generating logistic considerations and penalties for ignoring logistic requirements. In this way our future combat leaders will become accustomed to considering and dealing with logistic constraints.

It is interesting to note that most of our war college wargames focus almost solely on employing forces in combat although both the US Fleet Marine Force Manual 1-1, "Campaigning," and US Army Field Manual 100-5 address the importance of logistics.

The US Fleet Marine Force Manual 1-1 (FMFM 1-1) recognizes the combat/support relationship and breaks down logistics into three major categories--strategic, operational, and tactical. (3:78) Of these three areas, strategic and operational logistics should be the theater CINC's primary concern when preparing for combat

operations. FMFM 1-1 defines these two levels of logistics as follows.

"Strategic Logistics involves the development and stocking of war materials and their deployment from the United States to various theaters."

"Operational Logistics...connects the logistical efforts at the tactical and strategic levels, taking the resources supplied by strategy and making them available in sufficient amounts to the tactical commander."(3:78)

Operational logistics is further comprised of three major tasks.

1. "...Procure locally those necessary resources not provided by strategy" (this may include host nation or inter-service support agreements or even captured enemy resources).
2. "...Manage often limited resources as necessary to sustain the campaign."
3. "...Deliver resources in the necessary amounts to the tactical forces. This involves the creation of a logistical delivery system sufficient to sustain the force throughout the length of the campaign and the breadth of the theater or area of operations." (3:79)

The Army is equally concerned about the impact of logistics upon the success of military campaigns. In the US Army Field Manual 100-5, logistics is listed as an area of consideration for all commanders. Specifically, the authors of the latest draft Army Field Manual say:

"Successful operations involving the projection of force or forces require robust, flexible logistical capability. The nature of logistical projection will depend upon the size of the force utilized, the maturity of the theater, the availability of in-theater stockage, and host nation support capabilities. Force projection may require the development of forward support bases, intermediate staging bases and lodgement in theater with its associated over-the-shore or air flow requirements. Units may conduct split based logistical operations to reduce the burden on the deployment flow and to prevent unnecessary stockage in theater.

Logistical elements are especially critical during post-crisis or post-conflict activity. Normally, logistical units are among the last to redeploy depending upon the requirement for them to contribute to post-crisis or post-conflict activity. Commanders should anticipate this and plan accordingly. Logistical elements are especially important in peacetime operations as well as in post-conflict or post-crisis activity. They may have the primary mission under these circumstances." (4:3-4,3-5)

HISTORY

**"Those who do not know history
are condemned to repeat it."
George Santayana**

Clearly, both the Army's and Marine Corps' warfighting manuals recognize the criticality of logistics when waging war. This realization is not based upon theory it is rooted in historical fact. "Come as you are" wars are not a new phenomenon to the United States military. In fact, of the large military operations we have undertaken this century, only World War I and the Vietnam War allowed us to preplan our mobilization efforts to any significant degree. World War II, Korea, Grenada, and Desert Storm were all initially launched with the capabilities on hand at the time. Furthermore, when we look at the role of logistics during Korea, Grenada, and Desert Storm we find that they all have a great deal in common.

KOREA

When the People's Democratic Republic of Korea (North Korea) invaded the Republic of Korea (South Korea) on 25 June 1950, the United States was totally unprepared to launch a large military campaign, especially into a region as far away from the continental US as the Korean peninsula. After our victory in World War II we

had begun our demobilization at a frantic pace. Consequently, when North Korea invaded the South, " the US had no logistics planning/logistics staff or deployable logistics force/system (such as prepositioned material in the Pacific) Furthermore, the in-country infrastructure was virtually nonexistent. Manpower forces were hurriedly built up for immediate deployment, but adequate and proper in-theater equipment for their use was neglected." (5:34)

"Neither the Far East Command nor the Department of the Army appeared to have any prepared plan for support of military operations in Korea. An off-the-cuff decision to go into Korea was supported by a spontaneous UN recommendation "without reference to logistical plans and analysis." (5:35)

By the end of the Korean War, "31.5 million tons of equipment and supplies" were needed to support operations. (5:36) "Supplies on hand at the beginning of the war were sufficient only to sustain troops in peacetime activities for 60 days. Virtually no supplies were in the pipeline, and equipment and supplies from deactivated units, for the most part, were unserviceable. Depot stock levels fared no better. In late June 1950, depot stock levels approached 90 days for most supplies. Critical Army supply and equipment needs, however, were met early in the war--World War II surplus stocks "saved the day." (5:36) In other words, we were totally unprepared and if it hadn't been for WW II surplus we wouldn't have had enough equipment and supplies to fight for

more than 60 days at best.

Airlift was extremely limited and in constant demand. Consequently, the majority of supplies, equipment, and personnel had to be transported over the seas. Fortunately, the United States still had a large number of Liberty/Victory ships from WW II and a "reasonable Merchant Marine force was in existence" (5:36) but the distances involved were considerable and caused lengthy shipping times for everything.

Even when supplies, men, and equipment reached Korea the problem of an inadequate distribution infrastructure often prevented their rapid movement to the proper units. Korea had only one major railway and one major highway prior to the invasion. This fact, coupled with the need for highly mobile forces, meant that support forces also had to be highly mobile and couldn't operate from large fixed bases. As the war continued, the need for support forces continued to grow until "support personnel outnumbered combat forces by a ratio of 5 to 3." This created another logistical problem of how to support the supporting forces. In many cases ingenuity saved the day and human and animal transport was often used when dictated by terrain or vehicle transport was insufficient or unavailable. (5:35)

Korea presented new challenges for coordinating logistics with employment of multi-services forces. Consequently, the Joint Chiefs of Staff thought it would be a good idea to establish a joint staff in the theater to handle this coordination.

Unfortunately, General Douglas MacArthur, Commander of Far East Command, apparently didn't see the need for a joint staff. Robert F. Futrell, the author of The United States Air Force in Korea summed up the situation as follows:

"Although the US Joint Chiefs of Staff had directed the Far East Command to provide itself with a joint command staff adequate to ensure that the joint commander was fully cognizant of the capabilities, limitations, and most effective utilization of all forces under his command, the United Nations Command/Far East Command operated for the first two and one half years of the Korean War without a joint headquarters. Practically all of the interservice problems which arose during the Korean War could be traced to misunderstandings which in all likelihood, would never have arisen from the deliberation of a joint staff."(5:36)

This reluctance to develop a joint staff would surface again during the 1983 Grenada invasion--with similar results.

All in all, the Korean War was an excellent example of an ad hoc way of going to war. The United States never did mobilize for this conflict. In fact, we didn't declare war or even a national emergency. As a result, our full industrial might was never brought to bear to resolve this conflict and we relied heavily upon WW II stockpiles to see us through. If Japan had not already regained much of its industrial power and provided the United States with basing, transshipping, and medical facilities support who knows what the outcome might have been.

GRENADA

Despite the logistical problems identified during the Korean War, thirty years later

the US military failed to fully comprehend the lessons they should have learned in 1950. One problem associated with the invasion of Grenada in 1983 (known as Operation URGENT FURY) was the senior military leaders' decision to keep the operation under the tightest of security right up to execution. This decision led the key commanders to keep advance planning to a minimum and more importantly, it led to the total exclusion of logisticians from the planning process. Consequently, no advanced logistics planning took place. In fact, Major General Click Smith, the Joint Chiefs of Staff Acting Director of Logistics, was totally unaware of the pending invasion of Grenada until he was asked for a logistics assessment a mere 24 hours before URGENT FURY began. (6:40)

Since Admiral McDonald (Commander-in-Chief, Atlantic Command) and Vice Admiral Metcalf (Commander, Joint Task Force 120) operated under the assumption that each service would provide its own support, they apparently did not see the need for establishing a joint logistics staff, just as the Far East Command had failed to see this same need in 1950. This oversight created innumerable problems throughout the operation, not the least of which was a total lack of "adequate intelligence for logistics, such as the capacity of the airfields, the adequacy of road networks, the availability of local supplies, the source of potable water, and the specific health conditions..."(6:18)

Throughout the operation, combat plans often changed with little or no warning.

These last minute changes may have seemed operationally feasible and sound to the combat commanders, but in reality they placed their troops in jeopardy. For example, the commander of the Forward Area Support Team (FAST) that deployed with the infantry battalions was making a valiant effort to obtain essential supplies of ammunition, food, and water from the Army's main support base at Ft Bragg, North Carolina. Unfortunately, when the division commander decided to stop the movements of critical supplies so he could send six more infantry battalions into the theater, chaos reigned. Desperately needed supplies, which support units at Ft Bragg were palletizing and moving to the "Green Ramp" at Pope Air Force Base, became lost as units scrambled to replace supplies with the six new battalions' combat equipment. Not only did this decision delay critical resupply of forces already in theater, it also meant more units would now require more logistical support from an already overtasked FAST. The net result was a totally inefficient support structure for combat units.

To make this problem even worse, "the Assistant Division Commander for Support was unaware of the physical limitations of Port Salinas airfield. The airport could only accommodate one C-141 or one C-130 aircraft on the ground. As he sought to be responsible to the division's logistical needs, he was unaware that aircraft were stacking up over the airfield or being diverted to Barbados"(6:28) Furthermore, no one was assigning priority to loads destined for Grenada so equipment and supplies arrived

in random order--a problem which would surface again during Operation DESERT SHIELD/STORM.

We can attribute much of the logistics oversight and resulting confusion to the fact that "all the commanders in the URGENT FURY decision-making chain had risen through the operational ranks and were much better versed in operations than logistics."(6:42) In other words, we were lucky that we weren't facing a large, well trained foe and had time to unsnarl some of the most critical logistic problems before men died due to incompetence. Once again, we proved to ourselves that adequate logistics cannot just be assumed and must be incorporated at all levels of planning and execution. Going to war in an ad hoc fashion is a certain recipe for disaster.

DESERT SHIELD/STORM

Despite the lessons of Korea and Grenada, the United States military still focused its attention on the Soviet Union and the Warsaw Pact. To counteract the threat, we developed large prepositioned stocks of equipment and supplies in the theater and forward based large numbers of units in Europe. But on August 2, 1990, when Saddam Hussein invaded Kuwait, we were once again faced with military action in a region where no military combat units and virtually no logistical infrastructure existed.

Operation DESERT SHIELD/STORM was a logisticians war. Before this conflict

ended, we would deploy almost a half-million personnel and their equipment halfway around the globe and sustain them for an indefinite period. Said another way, we would do the equivalent of moving the entire population of Oklahoma City along with its infrastructure halfway around the world. Our airlift forces would move the equivalent of the 15 month-long Berlin Airlift of 1948-1949 in the first six weeks of DESERT SHIELD.

Despite all these impressive accomplishments, this operation revealed some important lessons for commanders, some of which were lessons we should have learned from previous conflicts.

As students of Karl Von Clausewitz know, war is not an exact science for there are always unknowns which create unforeseen problems. Clausewitz referred to this as the *"fog and friction of war."* DESERT SHIELD/STORM had its share of fog and friction, some of which was self imposed.

One decision which had a tremendous impact upon our ability to properly equip and sustain our earliest deployed forces was the Commander-in-Chief, Central Command (CINCCENT), General Norman Schwarzkopf's decision to first deploy as many combat units as possible without their associated support units. This probably seemed prudent at the time since Saudi Arabia faced an immediate threat and our stated objective was to defend Saudi Arabia against Iraqi aggression. However, what this decision meant in reality was placing a force into combat with little or no logistical support. It also meant

that there would be no one there to receive and disperse the men and equipment when they arrived so combat units would have to fend for themselves. This was the same type situation we witnessed in Korea and Operation URGENT FURY. "As a result of CINCCENT's decision, many ground combat units found themselves relying on organic supplies and equipment, initial combat sustainment, host nation support (HNS), and afloat prepositioned supplies. Although many units were largely self-sufficient initially, some combat units began to experience shortages. Both the 82nd Airborne Division and the 24th Infantry Division (Mechanized) relied for a short time on HNS and on Marine Corps (USMC) forces for resupply of food and water." (2:43)

Airlift played a pivotal role in Operation DESERT SHIELD, especially during the first few weeks. However, many commanders, both at home and in the theater, failed to recognize or accept the fact that all lift and especially airlift was limited. Throughout the conflict the demand for lift far exceeded its capabilities. Everyone wanted to get to the theater immediately. To ensure that this happened everyone used the same urgent priority--"transportation priority 1 (TP-1) 999, the highest priority of air movement" (7:5)

With no discipline in the priority system, units in theater never knew when they would get their equipment or supplies. Furthermore, since everything was marked with the same priority there was no way to flag those items which really needed to be there immediately--an impact that field commanders had apparently failed to consider.

We were also very fortunate, from an airlift perspective, that President Bush was able to forge a strong coalition and we were able to obtain bases in Europe for staging aircraft and aircrews en route to the theater. If we had been faced with no European basing or overflight rights, such as in the 1973 Israeli Airlift, deployment and resupply missions would have been a mere trickle of what we actually obtained. Without basing rights, we would have been forced to air refuel every mission multiple times in order to make the round trip from the US to Saudi Arabia. Consequently, this requirement would have greatly reduced our airlift flow into and out of the theater.

While airlift was moving light rapid response forces into the CENTCOM theater, CINCCENT knew he had to deploy heavy forces to counter the threat of the Iraqi armored forces. Obviously, CINCCENT wanted US heavy forces (armor and mechanized units) moved to the theater-immediately, but was faced with the reality of limited sealift capability. "...Shortages of sufficient fast sealift with roll-on capability so crucial to loading and unloading armored equipment rapidly meant that heavy forces would [have to] deploy incrementally" rather than simultaneously.(8:47)

Once the units finally arrived in theater the logistical problems didn't end. General Schwarzkopf observed:

"Our corps and division commanders were determined--and rightly-so--to get their forces into position and poised for attack as ordered. But if a general didn't get as many trucks, say, as he thought he needed, he would complain to Third Army headquarters or chew Pagonis out." [Author's note: Major General William G.(Gus) Pagonis was the 22nd Support Command and theater logistics commander.] This

happened so often that I finally had to ask Gus what the trouble was. "Sir, these guys think we have a logistical system like the one in Europe, and they're asking for more than their fair share of trucks and supplies." Rather than try to arbitrate, I had a better solution. ... So I asked Powell [Chairman of the JCS] to expedite his [Pagonis] nomination for a third star. The President approved the request on January 28; it was the only battlefield promotion we made during Desert Storm. (9:423)

I believe this promotion signified CINCCENT's realization that logistics was extremely important and could render the campaign plan useless unless it was given proper attention by himself and his staff.

PRACTICE MAKES PERFECT

The three conflicts I've discussed highlight the importance of logistics to warfighting. It's safe to say that this fact will remain unchanged in the future and if DESERT STORM is any indication of future conflicts, we are going to continue to execute "come as you are" warfare. Success in these types of operations will greatly depend upon our ability to rapidly deploy combat power and properly provision and sustain those deployed units for as long as necessary.

So what does this mean to the combat leaders of tomorrow? Won't they have logistics experts working for them? Won't they take care of all the logistics problems so the CINC can concentrate on the "important" stuff? The answer to these questions is yes; future CINCs will have logistics experts working for them, but the "important" stuff is logistics. Those who read the Armed Forces Staff College Pub 2 will find the CINC's

responsibility for logistics clearly defined in the following way:

"The CINC, within his command, uses directive authority for logistics to ensure effectiveness and economy in operations. He also uses it to prevent or eliminate the unnecessary duplication of facilities and the overlap of functions among the command's Service components."(10:II-5-C-4)

In other words, CINCs need to know what their logistics limitations are and plan and execute their campaigns accordingly.

Many may feel that our future CINCs already know enough about logistics, but I question this premise. From my personal observations as a member of the National War College "Warriors in Battle" wargame simulation course, I feel many potential CINCs don't fully recognize logistics' role in warfighting. For example, during one wargame scenario which involved trying to move sufficient US forces to the Polish-Russian border to prevent an invasion by Russian and Ukrainian forces, the two teams' leaders assumed logistics could support any campaign plan.

Some of the leader's major miscalculations involved the ability to simultaneously deploy NATO forces into Poland. One team's leader wanted to move the entire 82nd Airborne Division into south Poland direct from the US. He anticipated this move would only take a few days. However, when I pointed out that during Operation DESERT SHIELD it took about two weeks for Air Mobility Command to move just two brigades of the 82nd into Saudi Arabia, he decided to withdraw that option. Another miscalculation involved focusing on just one rail line to move 3 Heavy Divisions when two other rail

lines were available but not as convenient. The net result: greatly increased deployment times due to backlogs of equipment on that single rail line. The other team's leader in this scenario was even more optimistic of logistics capability. His campaign plan called for moving 90% of his forces forward to the battle area in 25 days using just three rail lines and a couple of major roads. These forces included: 12 Heavy Divisions plus numerous Air Force Units and several other NATO units of division or smaller size. The plan was not executable from a logistics standpoint.

Both teams for this war game were composed of highly qualified personnel who are likely to compete for the Department of Defense's top leadership positions in the future. Despite this fact, they seemed to lack a true appreciation of logistics' impact on warfighting. However, this is not a crime. After all, the purpose of war games is to teach future combat leaders about warfighting and by the end of the Polish scenario, everyone had learned the necessity of making logistics an integral part of any war plan. However, in this particular simulation, logistics inputs had virtually no affect upon the outcome of the battle plan. Consequently, there was no avenue to reinforce the importance of logistics since the simulation didn't penalize combat leaders for bad logistics decisions. In reality, logistics would have had a significant impact on the executability of the campaign plan, especially in the deployment phase.

As I previously stated, wargames create learning situations where combat leaders

develop the skills they will need to prosecute real wars in the future. Therefore, we should make simulations as realistic as possible and expect mistakes. However, if we only concentrate on the direct employment of forces aspect of warfighting, we are doing a disservice to our future CINCs by not teaching them today that there is more to warfighting than simply employing forces in direct combat.

In Korea, Grenada, and DESERT STORM, our combat commanders risked a catastrophic defeat by employing forces without proper logistics support. We were lucky that the enemy failed to exploit our vulnerability in these cases, but should our future CINCs plan on this same luck? I don't think so.

Despite the historical precedence of the impact of logistics on successful campaigns, most of our Senior Service Schools still lack substantial, realistic logistics inputs in their wargames.

VICTORY THROUGH KNOWLEDGE

I don't mean to intimate that our Senior Service Schools are totally ignoring the role of logistics in their wargaming scenarios. After interviewing representatives from the Army, Navy, Air, and National War Colleges, I found all are interested in developing more logistics play in their major wargames. In fact, each college is involved in expanding logistics inputs to their wargames, but there is considerable difference

between the colleges in the degree logistics plays today.

For example, the Air War College runs 5 independent games a year as part of their National Defense Exercises. These games are designed to reflect two major simultaneous regional contingencies which force the students to split their resources between two theaters. If the students fail to properly plan their deployment the war can be terminated for lack of logistical support. However, this game is largely a manually generated exercise with limited logistics scope and overall wargame sophistication.(11)

The Army War College is somewhat less involved in logistics play in their wargames. According to their wargame center, logistics have "minimal impact" on their games. Deployment models do consider supply throughput, but they are designed on a "best case" scenario to support the campaign plan. What this means is they don't incorporate such inputs as the impacts of the Red Forces interdicting sealift or airlift. Furthermore, they do not worry about resupply or sustainment since they assume combat units will always have a full 60 days of supplies available and they terminate the game before the 60 day period ends. In other words, logistics is never a *war-stopper*.(12)

The Navy War College's "Enhanced Naval Wargaming System" only uses logistics at a rudimentary level. This model primarily tracks only fuel, ordnance, ship battle-damage repair, and medical regulation (movement of casualties and blood within

the theater). Any throughput data required for a specific scenario is mostly done offline and manually. If amphibious operations are part of the scenario, the computer will only track fuel and general supplies. Sustainment is considered a non-issue by the wargamers since Marine units deploy with 30 days of supplies. The scenarios always assume either termination of amphibious operations in less than 30 days or the closure *early* before the Marines use up their supplies. Again, a logistical "best case" scenario.

Like the Army War College, the Navy War College's scenarios do not allow logistics to end the war. In fact, if a situation arises where fuel and ammo resupply ships (station ships) are interdicted by the enemy, the controllers will simply stop the game long enough to point out the *real* impacts of this loss and then resume the game with full logistics support. In reality, the sinking of the station ship would probably force the carrier to depart the battle area for lack of support. To avoid situations like this from arising during the game, wargame controllers routinely brief participants on any potential war stopping logistics before the game begins in an effort to keep the employment plan moving. Once again, the focus of the wargames is almost entirely on the direct employment phase of campaigns and assumes away or disregards other crucial aspects of a successful campaign plan.

As a participant in the National War College's "Warriors at Battle" wargaming

course, I have observed a desire on behalf of the instructors to ensure logistics is considered in every wargame. However, during the first few simulations, logistics is often discussed during the planning phase, but has little if any impacts on the employment phase. Like the other war colleges, these simulations are designed primarily to teach campaign planning and employment of forces.

As the year progresses, the National War College begins to place more emphasis on logistics as it prepares for the tri-service wargame called the Joint Land Aerospace Sea and Space(JLASS) wargame. This game is conducted at the Wargaming Center at Maxwell Air Force Base and involves students from each of the war colleges. The National War College students arrive with a detailed Red Force campaign plan which incorporates a significant quantity of logistical inputs. Blue Force logistics is targeted at every level in an effort to cripple the deploying forces. In most scenarios the Red Forces will have an early logistical advantage since the war is fought close to their territory. The Blue Forces on the other hand will most likely have to transit several thousand miles before they reach the theater which makes them more vulnerable to attacks on their logistics.

Wargame controllers do not necessarily allow every logistics target to be totally destroyed, but they do make some attempts to calculate a realistic impact upon the opposing force. In this way, the JLASS wargame can achieve a balance between

teaching the importance of logistics and learning to successfully employ units in direct combat. This is a compromise approach but, at least it is a step in the right direction towards teaching the logistic realities of war to our future CINCs.

CONCLUSIONS

War simulations are one of the best tools we possess for teaching the principles of fighting a real war. Today's technology allows us to develop realistic scenarios with a multitude of variables which closely approximate the real battlefield to include the "fog and friction of war." So, why not expand the role of logistics in war simulations to more closely approximate their impacts?

Specifically, I recommend that all Senior Service Schools develop scenarios which force combat commanders to consider logistics throughout their campaign planning and execution. These scenarios should include outcomes that reflect the impacts of good and bad logistics decisions. This does not mean we need to develop simulations that track every bullet or gallon of fuel and overload the team CINCs with detailed logistical data. However, war simulations classes should, at the very least, incorporate logistics at the strategic and operational levels during the campaign planning phase. Instructors need to supply some notional logistics data to assist the teams in developing their logistics plan. Ideally, the teams will only be allowed to

execute their campaign plan within the confines of their logistics plan. We must drive home the point that "...the logistics direction of the CINC could have an effect on the phasing of forces, establishing supply buildup objectives, determining the evacuation policy, and directing the method of resupply." (10:11-5-C-4) These are crucial decisions CINCs will face in a real war and the sooner we teach this to our future CINCs, the better off our combat forces will be.

The following are but a few examples of what we could incorporate into our wargames to make them more logistically realistic:

1. Deny overflight/basing rights to airlift aircraft supporting a distant operation.
2. Have the enemy target and destroy Aerial Ports and Sea Ports of Debarkation.
3. Allow the enemy to destroy airlift and sealift assets en route to the theater.
4. Develop factors to represent the loss of ships or airlift aircraft due to maintenance failures.
5. Design data tables which allow teams to have notional logistics data on estimated times and tonnage to move different combat units over a given distance. Information from these tables would be used by the CINCs to approximate logistic requirements and allow them to incorporate them into their plans.

6. Develop penalties for misuse of the transportation priority system such as in
DESERT SHIELD/STORM.

This is not a comprehensive list of potential logistic wargame inputs but only a few examples of how we can enhance the knowledge of our future CINCs by making the logistics aspects of war gaming more realistic. The key to successfully incorporating logistics into wargames is to ensure the simulation reflects realistic results when logistics is degraded. If there are no realistic penalties or rewards associated with logistics, players may tend to disregard logistics' role in the overall campaign. I am sure, given half a chance, people who are well versed in developing war simulations and *real* logisticians can come up with an almost unlimited number of ways to make logistics "come alive" in war games.

There will always be debate over how much logistics should constrain war simulations. After all, the object of wargames is to teach specific warfighting lessons and if we allow logistics to always be the war-stopper, how will students learn to properly employ units in combat? I suggest, if the war colleges are uncomfortable in adding more logistics play to their current scenarios, they consider designing at least one new scenario that focuses primarily on warfighting logistics. In this way, we can expose our future combat leaders to the importance of logistics without compromising the learning objectives of currently established wargames.

The bottom line is that effective combat leaders need to be part warrior and part logistician if they want to win wars at the lowest possible cost. Our Senior Service Schools must take the initiative now to ensure our future CINCs know how to be both.

"The best thing is for the commander himself to have a clear picture of the real potentialities of his supply organization and to base all his demands on his own estimate. This will force the supply staffs to develop their initiative, and though they may grumble, they will as a result produce many times what they would have done left to themselves." (16: 97)

**Field Marshall Erwin Rommel
(1941)**

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